



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
|-----------------|-------------|----------------------|---------------------|------------------|

10/800,957

03/15/2004

Sarah K. Patch

GEMS8081.195

9964

27061 7590 04/27/2007  
ZIOLKOWSKI PATENT SOLUTIONS GROUP, SC (GEMS)  
136 S WISCONSIN ST  
PORT WASHINGTON, WI 53074

EXAMINER

CHAO, ELMER M

ART UNIT

PAPER NUMBER

3737

| SHORTENED STATUTORY PERIOD OF RESPONSE | MAIL DATE | DELIVERY MODE |
|--|-----------|---------------|
|--|-----------|---------------|

3 MONTHS

04/27/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

|                              |                        |                     |  |
|------------------------------|------------------------|---------------------|--|
| <b>Office Action Summary</b> | <b>Application No.</b> | <b>Applicant(s)</b> |  |
|                              | 10/800,957             | PATCH, SARAH K.     |  |
|                              | <b>Examiner</b>        | <b>Art Unit</b>     |  |
|                              | Elmer Chao             | 3737                |  |

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 12 January 2007.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-26 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-26 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

### **DETAILED ACTION**

1. Acknowledgement is made of the amendment filed 1/12/2007.

#### ***Response to Arguments***

2. Applicant's arguments filed 1/12/2007 have been fully considered but they are not persuasive.
3. With respect to Applicant's arguments regarding the rejection under 35 U.S.C. §101, Examiner directs Applicant's attention to MPEP § 2106(IV)(C), where it is stated that "Determining whether the claim falls within one of the four enumerated categories of patentable subject matter recited in 35 U.S.C. §101...does not end the analysis because the claims directed to nothing more than abstract ideas...are not eligible for patent protection." Examiner again directs Applicant's attention to the Office Action dated 10/12/2006, pages 2-5, where Examiner has provided a prima facie case of unpatentability. To further elaborate, Examiner asserts that the language contained in Claim 1 merely states a method of "acquiring" and "determining" sets of TCT data. However, the steps are claimed without any specific details on the method of acquiring, nor any specific details on the method of determining, nor a descriptive preamble, leads Examiner to deem Claim 1 as a whole to be merely an abstract idea. The claim does not cause a transformation because the steps of "acquiring" a set of TCT data and "determining" a second set of TCT data do not provide a clear transformation. The results are not useful because the claim doesn't solve any problems by merely determining a second set of data. The results are not tangible because merely determining a set of data does not provide for a tangible result such as displaying the

Art Unit: 3737

data or further using the data to produce an image. Furthermore, the results are not concrete because there is nothing reproducible. Depending on how the abstract terms are interpreted, the final result can almost be any set of TCT data that is somehow derived or determined from first set of TCT data. Examiner would like to invite Applicant to change or add to the language in Claim 1 so as to more accurately define the method being claimed. Merely acquiring a data set and then determining another data set is an abstract concept on its own and must be placed into a better-defined context in order to overcome the rejection under 35 U.S.C. §101.

4. With respect to Applicant's arguments regarding Claims 1-3, 5-9, 13, 16-19, and 24-26, Applicant argues that Kruger does not teach determining or deriving a second set of TCT data from a first set of TCT data. However, as mentioned above in the maintaining of the 101 rejection, the language of claim 1 reciting "acquiring" and "determining" without any further elaboration within the claim causes the claim to be interpreted as an abstract concept. This particular abstract concept lacks the limitations necessary to define a tangible scope, and subsequently it may lack the tangible scope as intended by the Applicant. Kruger does teach "determining" or "deriving" a second set of TCT data from a first set of TCT data. Specifically, in order to plot the image, Kruger teaches acquiring a set of TCT data from one portion, storing the signals, then determining (based the first set of signals and any previous sets of signals) whether or not the data have been collected for all the sixty-four angular orientations of the imaging bowl (Fig. 12B, step 112). If the data has not been collected for all the sixty-four angular orientations, then the imaging bowl is rotated  $1/64$  of a complete turn,

Art Unit: 3737

positioning the transducers for the next set of signal measurements (Fig. 12B, step 114). This fully satisfies the language of "acquiring" a first TCT set and then "determining" or "deriving" a second TCT set from the first TCT set (also see column 14, lines 4-12). Therefore, the rejection under Kruger will be maintained.

5. With respect to Applicant's arguments regarding the rejection under 35 USC § 112, Examiner has withdrawn the rejection in light of the newly amended Claim 16.

### ***Claim Rejections - 35 USC § 101***

6. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

7. **Claims 1-12** are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

On October 26, 2005, the USPTO published Interim Guidelines for Examination of Patent Applications for Patent Subject Matter Eligibility. See:

[http://www.uspto.gov/web/offices/pac/dapp/opla/preognotice/guidelines101\\_20051026.pdf](http://www.uspto.gov/web/offices/pac/dapp/opla/preognotice/guidelines101_20051026.pdf)

This guideline details a procedure for determining patent eligible subject matter. As to **claim 1**, the first step in this process is whether the claims fall within one of enumerated categories. In the immediate application, the claims are drawn to a process - a "method of acquiring a first set of TCT data...and determining a second set of TCT data" - and meets this step. However, the analysis does not end here. The next

Art Unit: 3737

step is whether a judicial exception (abstract ideas, laws of nature, natural phenomenon) is provided in the claim. In the immediate application, claim 1 clearly includes one of the judicial exceptions in that “determining” the data is nothing more than an abstract idea. While abstract ideas alone are not eligible, the claim as a whole must be analyzed to determine whether it is for a particular application of the abstract idea. For claims including such excluded subject matter to be eligible, the claim must be for a practical application of the abstract idea, law of nature, or natural phenomena.

To satisfy the requirement of a practical application, the claimed invention must:

(1) transform an article or physical object to a different state or thing; if no transformation, then

(2) the claimed invention must produce a useful, concrete, and tangible result.

Regarding (1) above, the claims do not provide a transformation or reduction of an article to a different state or thing. “acquiring” and “determining” the data of a second set of data does not transform an article or physical object to a different state or thing. Accordingly, one must then consider whether the claimed invention produces a useful, concrete, and tangible result.

(1) Useful Result

For an invention to be “useful” it must satisfy the utility requirement of section 101. The USPTO’s official interpretation of the utility requirement provides that the utility of the invention has to be (i) specific, (ii) substantial and (iii) credible. See MPEP 2107. It can be argued that the claim does not provide a useful result in that the claim

Art Unit: 3737

does not actually solve a problem. Simple inspection with no result thereafter does not appear to be useful.

**(2) Tangible Result**

The tangible requirement does not necessarily mean that a claim must either be tied to a particular machine or apparatus or must operate to change articles or materials to a different state or thing. However, the tangible requirement does require that the claim must recite more than a 101 judicial exception, in that the process claim must set forth a practical application of that 101 judicial exception to produce a real world result.

Regarding the tangible result requirement, the claim clearly does not provide a practical application for reasons similar to that discussed above. For example, once the second set of data is determined, how is this then applied?

**(3) Concrete Result**

Another consideration is whether the invention produces a “concrete” result. Usually, this question arises when a result cannot be assured. In other words, the process must have a result that can be substantially repeatable or the process must substantially produce the same result again. Resolving this question is dependent on the level of skill in the art. For example, if the claimed invention is for a process which requires a particular skill, to determine whether the process is substantially repeatable will necessarily require a determination of the level of skill of the ordinary skilled artisan.

Regarding the concrete result requirement, the claim does not provide a result that can be assured in that the result cannot be substantially repeatable and the

process cannot substantially produce the same result again. Simply determining the second set of data does not produce any concrete images.

In view of the above analysis, applicant's claim 1 is a process which includes a judicial exception therein. Upon review of the claim as a whole, there is no transformation nor does the claim produce a useful, concrete, and tangible result. Accordingly, the claim is non-statutory under 35 U.S.C. 101.

It is noted that the subject matter of **claim 2** does not remedy the statutory requirement.

Regarding **claims 3-12**, the claims are dependent on claim 1 and are likewise rejected.

### ***Claim Rejections - 35 USC § 102***

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

9. **Claims 1-3, 5-9, 13, 16-19, 24-26** are rejected under 35 U.S.C. 102(b) as being anticipated by Kruger (U.S. 6,216,025 B1).

Regarding **claims 1-3, 9, 13, 16-19, and 24-26** Kruger '025 teaches a method of imaging a breast comprising the steps of: projecting high frequency energy (C4, L46-47, "...microwave or radio wave energy...") toward a breast to induce thermal expansion of tissue in the breast positioned inside hemispherical shaped imaging tank



Art Unit: 3737

(Fig. 1, Item 14) having a fluid disposed therein, the fluid having dielectric and ultrasonic properties similar to that of breast tissue (C4, L27-34; C5, L5-8) with an energy source (C4, L49-51; Fig. 1, Item 22) to detect a tumor in the breast (C5, L11-15); receiving ultrasonic emissions from a first portion of the breast resulting from the thermal expansion (C6, L17-21, "Following each pulse of radiation...signals recorded by each of the transducer elements...") by means of one or more sensors placed along an external surface of the tank (Fig. 2, Item 33); generating a first TCT dataset from the ultrasonic emissions (Fig. 12A, Item 92); and deriving a second TCT dataset from the first TCT dataset (Fig. 12A, Item 98) with the use of a computer (Fig. 1, Item 36).

Kruger teaches "determining" or "deriving" a second set of TCT data from a first set of TCT data. Specifically, in order to plot the image, Kruger teaches acquiring a set of TCT data from one portion, storing the signals, then determining (based the first set of signals and any previous sets of signals) whether or not the data have been collected for all the sixty-four angular orientations of the imaging bowl (Fig. 12B, step 112). If the data has not been collected for all the sixty-four angular orientations, then the imaging bowl is rotated 1/64 of a complete turn, positioning the transducers for the next set of signal measurements (Fig. 12B, step 114). This fully satisfies the language of "acquiring" a first TCT set and then "determining" or "deriving" a second TCT set from the first TCT set (also see column 14, lines 4-12).

Regarding **claims 5-8**, Kruger '025 teaches the step of impulsively and periodically pulsing the imaging object (Fig. 12B, Item 108, the step describes varying the period between a range of numbers, which can be varying "impulsively," or set

Art Unit: 3737

constant, "periodically."). Also, the RF pulses are both uniform and selective (Fig. 2, Item 14, see the wave propagate in the hemispherical bowl in a uniform manner, as it is selectively sourced from the bottom of the bowl).

### ***Claim Rejections - 35 USC § 103***

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

11. **Claim 4** is rejected under 35 U.S.C. 103(a) as being unpatentable over Kruger '025 in view of Takashima (JP363211879). Kruger '025 teaches the method of acquiring the first set of TCT data and determining the second set of TCT data. Kruger '025 does not disclose the method of reducing the shading of an image. However, Takashima '879 teaches a method of shading correction by superposing parabolic waveforms or triangular pulses (abstract). It would have been obvious to a person of ordinary skill in the art at the time of the invention to modify Kruger '025 to correct the shading of the image generated by the two data sets. Such a modification is advantageous when imaging because the image would be made clearer and easier to view by reducing the shading of it.

12. **Claim 10-12, 13-15, and 20, 21, and 23** are rejected under 35 U.S.C. 103(a) as being unpatentable over Kruger '025 in view of Ben-Haim et al. (U.S. 2002/0065455 A1). Kruger '025 teaches the limitations as discussed above. Kruger '025 does not

Art Unit: 3737

teach using a TCT data set to determine a second set of TCT data through the use of a Legendre Polynomial. However, Ben-Haim '455 teaches the use of a Legendre Polynomial (Para 149). It would have been obvious to a person of ordinary skill in the art to modify Kruger '025 to include the use of a Legendre Polynomial. Such a modification is useful in assisting in the imaging of the imaging object at remote locations, as evidenced by Ben-Haim '455's use of it in determining the location and orientations of remote objects (Para 157).

13. **Claim 22** is rejected under 35 U.S.C. 103(a) as being unpatentable over Kruger '025 in view of Ben-Haim '455, and further in view of Maas, III (U.S. 6,181,832 B1). Kruger '025 and Ben-Haim '455 disclose all of the limitations as discussed above. They do not disclose the use of a computer to reduce partial scan artifacts in an image. However, Maas '832 teaches the use of a computer to reduce motion artifacts from image data (abstract). It would have been obvious to a person of ordinary skill in the art at the time of the invention to modify Kruger '025 and Ben-Haim '455 to include the computer to reduce the motion artifacts from image data as evidenced by Maas '832. Such a modification will yield in a more accurate image if the patient inadvertently moves (C1, L35-46).

### ***Conclusion***

14. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

Art Unit: 3737

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Elmer Chao whose telephone number is (571)272-0674. The examiner can normally be reached on 9am-4pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Brian Casler can be reached on (571)272-4956. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 3737

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

EC  
4/02/2007

Eleni Mantzi Mesleager  
 SPE 3768